

FILED MAIL SECTION

MAY 31 3 13 PM '95 Before the
Federal Communications Commission
Washington, D.C. 20554

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PR Docket No. 92-257

In the Matter of

Amendment of the	RM-7956
Commission's Rules	RM-8031
Concerning Maritime	RM-8352
Communications	

FURTHER NOTICE OF PROPOSED RULE MAKING

Adopted: April 26, 1995; Released: May 25, 1995

Comment Date: September 22, 1995

Reply Comment Date: November 21, 1995

By the Commission:

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I. INTRODUCTION

1. This *Further Notice of Proposed Rule Making (Further Notice)* continues our effort to provide adaptive regulations and improve communication capabilities in the Maritime Service begun in our *Notice of Proposed Rule Making and Notice of Inquiry (NOI)*, released November 30, 1992.¹ By this Notice, we are proposing rules to require minimum digital selective calling (DSC) capabilities in maritime communications, to permit automatic interconnection between maritime VHF radios and the public switched telephone network (PSTN), to establish alternative requirements for narrow-band direct printing emissions, to allow intraservice frequency sharing, and to permit limited maritime mobile sharing of certain private land mobile frequencies. We seek comments to assist us in formulating rules aimed at increasing the efficient use of the maritime radio spectrum and removing economic disincentives to the establishment and maintenance of stations in the maritime services, while at the same time ensuring that the safety of life and property is not adversely affected by these changes.

II. BACKGROUND

2. The Maritime Mobile Radio Service is the oldest radio service administered by the Commission. As radio technology has advanced, the use of maritime radio has expanded. Maritime radios are now found not only on large oceangoing vessels, but on smaller craft of every description, from commercial vessels operating in coastal areas to pleasure boats on the lakes and rivers of the United States, and even in small sailboats and racing sculls. There are now approximately 635,000 vessel licensees in the U.S. Maritime Services. Maritime radio continues to provide a critical safety function, but also is used for commercial operational communications and general purpose communications including personal communications on U.S. waters and the high seas.

3. Changes in communications technology drive changes in communications procedures and markets and necessitate periodic review of our regulations to ensure that they continue to facilitate our regulatory goals of efficient, reliable, flexible communications. The changes proposed here are intended to take advantage of technological advances to make maritime communications widely available and efficient, while ensuring that the core purpose of maritime communications – safety – is not compromised.

III. DISCUSSION

A. Digital Selective Calling (DSC)

4. Briefly, DSC is an international system developed for the transmission of digital signaling on designated MF, HF, and VHF radio frequencies. The implementation of the Global Maritime Distress and Safety System (GMDSS)²

¹ PR Docket No. 92-257, 7 FCC Rcd 7863 (1992).

² The GMDSS, the result of over ten years of work by the world's maritime nations, is an automated ship-to-shore distress

alerting system that relies on satellite and advanced terrestrial systems that will be phased in from 1992-1999. See *Report and Order*, PR Docket No. 90-480, 7 FCC Rcd 951 (1992).

amendments to the International Convention for the Safety of Life at Sea (Safety Convention)³ requires certain ships to be equipped with DSC radio installations. DSC is used to establish contact automatically between marine radio stations for distress calls and routine operational communications.⁴ Presently, most radio contact is established by making a voice call and relying on an aural watch by the called party to hear the call. The advantages of DSC include faster distress alerting capabilities and the automatic transmission of information, such as the nature of an emergency situation and the identity and location of the caller. Further, in a non-distress situation, DSC minimizes the connect time necessary to place a call and increases spectrum efficiency.

5. The United States Coast Guard (USCG) submitted a Petition for Rule Making (Petition), RM-8031, dated June 23, 1992, requesting that the Commission require all marine MF, HF, and VHF transmitters sold in the United States after February 1, 1997, to have minimum DSC signalling capability.⁵ The USCG noted that in 1999, all vessels subject to the GMDSS regulations will be required to equip with DSC capable transmitters and that it will no longer be possible to contact these GMDSS ships on the present calling channels.⁶ The USCG is concerned that marine safety will be compromised if all vessels are not able to communicate effectively with one another, particularly in closing situations.⁷ In the *NOI* we asked for comments from the marine community regarding: 1) requiring minimum DSC capability in all marine radios marketed in the U.S. after a date certain, 2) including the capability to interconnect automatically with the PSTN via DSC signalling as a minimum requirement, 3) designating DSC as the only selective calling protocol permitted in the maritime services, and 4) whether the USCG's proposed minimum DSC requirements are sufficient.⁸

6. All commenters supported the USCG's proposal to require minimum DSC capabilities on VHF marine transmitters.⁹ For example, SEA, Inc. (SEA) points out that a minimum VHF DSC requirement will greatly enhance safety once the GMDSS is fully operational in 1999 and provide the groundwork for advanced telecommunications services.¹⁰ Further, in support of the USCG proposal, the National Marine Electronics Association (NMEA) suggests implementation occur even sooner, requiring marine radios installed after February 1, 1996, to have minimum

DSC capabilities, one year earlier than the USCG proposal.¹¹ The timetable proposed by NMEA, however, could place unreasonable time constraints on manufacturers and the maritime community. Further, full implementation of the GMDSS requirement to carry DSC equipment is not until February 1, 1999. Therefore, we are proposing that all marine radiotelephone transmitters manufactured or imported into the United States on or after February 1, 1997, or radios installed on or after February 1, 1999, excluding units removed for adjustment or seasonal storage and then reinstalled in the same vessel, must have the minimum DSC capabilities contained in Section 80.203 of the proposed rules.

7. We asked for specific comment on whether the Commission should propose rules declaring DSC to be the only selective calling protocol permitted to be used in the maritime service.¹² Several commenters oppose mandating DSC as the sole selective calling protocol in the maritime services. For example, KFS World Communications, Inc. (KFS), the Maritime Telephone Company (MTC), and the Radio Technical Commission for the Maritime Services (RTCM) all support the use of any "open" protocol,¹³ including DSC, for non-distress communications. Additionally, the Electronic Company of New Zealand (ECONZ) points out that products such as Sealink can handle multiple protocols, including DSC, and may be cheaper for public coast stations to implement on public correspondence channels.¹⁴ Global Maritime Communications Systems, Inc. and Ross Engineering Company (GMCSI/REC), however, support DSC as the standard selective calling protocol in preparation for a nationwide system of VHF public coast stations.¹⁵ In contrast, MTC comments point out that there is no need for a standard non-distress protocol because most boating is local.¹⁶ MTC maintains that the local marketplace should determine the protocol of choice.

8. No commenters oppose requiring DSC as the standard selective calling protocol for distress, safety, and calling. We agree, however, with many commenters that DSC may not be the most efficient protocol for establishing routine communications by all marine users. Therefore, we pro-

³ The current 1974 Safety Convention, entered into force May 25, 1980, 32 U.S.T. 47, T.I.A.S. 9700, superseded the 1960 and 1948 Safety Conventions.

⁴ DSC technical and operational characteristics are found in CCIR Recommendations 493 and 541, respectively.

⁵ See USCG Petition at 1.

⁶ Under the current system, ships stand watch on the international radiotelephone distress and calling frequencies 156.8 MHz (marine VHF channel 16) and 2182 kHz.

⁷ For example, barges and tug boats operating in harbors or pleasure boats operating in coastal waters are not subject to GMDSS regulations and will not be required to equip with DSC capable transmitters. Also, implicit in the Coast Guard's petition is that there will be a reduced watch on marine VHF channel 16 by Coast Guard stations after 1999. See *NOI* at ¶ 18.

⁸ See *NOI*, at ¶¶ 15-18.

⁹ Supporting comments were filed by Electronic Company of New Zealand (ECONZ), Global Communications Corporation (GCC), Global Maritime Communications Systems, Inc. and Ross Engineering Company (GMCSI/REC), KFS World Communications (KFS), Marine Telephone Company (MTC), Mobile

Marine Radio, Inc. (MMR), National Marine Electronics Association (NMEA), Radio Technical Commission for Maritime Services (RTCM), SEA, Inc. (SEA), and the USCG.

¹⁰ See SEA comments at 4.

¹¹ See NMEA comments at 5.

¹² In ¶ 18 of the *NOI* we noted that the Commission's Rules permit the use of selective calling equipment other than DSC for a period of three years after the Commission declares DSC to be the only selective calling protocol permitted in the maritime services. See 47 C.F.R. § 80.207(a)(4).

¹³ Protocols whose documentation is available to the general public and are non-proprietary in nature are called "open" protocols. The commenters continue to support DSC as the sole selective calling protocol for distress communications. See KFS comments at 6, MTC comments at 10, and RTCM comments at 5.

¹⁴ See ECONZ comments at 4.

¹⁵ No information concerning plans to develop such a nationwide system has been submitted formally or informally to the Commission. See GMCSI/REC comments at 2.

¹⁶ See MTC comments at 3.

pose to permit selective calling via any "open" protocol on MF, HF, and VHF frequencies not specifically allocated for DSC.¹⁷

9. In the *NOI* we asked whether the capability to interconnect automatically with the PSTN should be one of the minimum DSC requirements. RTCM opposes amending the USCG proposal, pointing out that interconnection capability was not incorporated into the USCG proposal because of the added cost.¹⁸ RTCM argues that the minimum requirements were developed in an attempt to achieve reasonable minimum safety and operating considerations with minimal mandatory equipment cost increase. Additionally, if we include interconnection capability as one of the minimum DSC requirements, DSC could become the *de facto* standard for interconnection with public coast stations. This action would be contrary to our decision to permit any "open" protocol and could hinder the development of innovative marine systems. Therefore, because of added cost considerations and the desire to allow any "open" protocol to provide interconnection, we will not include interconnection capability as one of the proposed minimum DSC requirements.

10. In summary, we are proposing that the minimum DSC requirements listed in Appendix B be required for all MF, HF, and VHF radiotelephone transmitters manufactured in, or imported into, the United States on or after February 1, 1997, or marketed or installed in vessels on or after February 1, 1999. Further, we are proposing to permit the use of "open" selective calling protocols on marine VHF vessel operations,¹⁹ on maritime control frequencies and on MF, HF, and VHF public correspondence channels.

B. Automatic interconnection with PSTN

11. In the *NOI*, we noted that placing calls from ship radios into the PSTN is inconvenient and time consuming. The manual intervention needed to place a call into the PSTN, the time delay involved and the frequent need to divulge personal information are possible causes of the displacement of public coast stations by cellular telephones and other communications methods. The current rules effectively prevent automatic interconnection of a ship radio call into the PSTN.²⁰ We asked whether we should consider changing the rules to permit automatic interconnection for all public coast stations. We further asked what the effects on maritime safety of such an action would be, whether the DSC protocol can provide the signalling necessary for automatic interconnection,²¹ and whether we should require operator assistance for ship-to-shore telephone calls.²²

¹⁷ Such selective calling techniques are currently permitted for signalling ship stations and are widely used now in the maritime radio service by public coast stations and private coast stations. See 47 C.F.R. § 80.207.

¹⁸ See RTCM comments at 6.

¹⁹ "Vessel Operations" is the proposed new name for both commercial and non-commercial communications. See ¶ 28 *infra*.

²⁰ See 47 C.F.R. § 80.179, which allows unattended operation only when using DSC or in association with an AMTS. We are also proposing to amend several rule sections which impose unnecessary technological limitations on public coast stations which elect to provide automated service.

²¹ Commenters disagree on whether the DSC protocol can

12. The eight commenters who address this subject²³ are unanimously in favor of allowing automatic interconnection to the PSTN at all public coast stations. They state that automatic interconnection is essential to the ability of public coast stations to compete with other carriers in providing communications services. The commenters also agree that automatic interconnections would have no adverse impact on maritime safety, as the system would allow direct dialing to safety authorities such as the USCG and state and local authorities, while at the same time leaving intact the various methods of broadcast distress calls, such as emergency channels and emergency position indicating radio beacons (EPIRBs). On the question of mandatory operator assistance, the comments are divided. KFS and RTCM recommend requiring an operator to provide assistance on a back-up basis, for reasons of safety and convenience of communications.²⁴ MTC, NMEA and Mobile Marine Radio, Inc. (MMR) state that we should leave the decision on operator assistance to each public coast station, so that they could provide an operator or not according to the needs of vessels in their areas of coverage.²⁵ These comments point out that maintaining an operator at a public coast station is expensive, and that this expense could drive some public coast stations out of business.

13. After considering all the information and arguments presented, we propose to amend the rules to allow any public coast station to interconnect automatically maritime radio to the PSTN. We do not propose to mandate a protocol for interconnection, for the same reasons set forth in paragraphs 9 through 11 above. Finally, we propose to allow each public coast station licensee to decide on the need for operator assistance in making calls. Each public coast station is in the best position to evaluate the times when it can expect the heaviest traffic, and hire operators when it is cost effective to do so, leaving unassisted automatic interconnect for periods when the public coast station might otherwise be closed entirely for want of traffic. This proposal should maximize flexibility in the Maritime Mobile Service and accommodate technological advancements in the provision of new services to the boating public, while at the same time protecting the safety function of marine radio.

C. Narrow-Band Direct Printing (NB-DP)

14. NB-DP is a form of telegraphy for the automatic transmission and receipt of data communications in the marine HF band. NB-DP is used for communications either from ship to public coast station or from ship to ship. Because NB-DP is limited to a data modulation rate of 100 baud, communication can be slow, costly, and spectrally inefficient.²⁶ In the *NOI*, we asked whether the Commis-

extract necessary billing information. Although field testing of the protocol will eventually resolve this dispute, this point may be moot in view of our proposal to permit any "open" protocol on non-distress channels.

²² See *NOI* at ¶ 26.

²³ Comments on this subject were filed by MMR, the Ohio River Company (ORCO), MTC, NMEA, RTCM, SEA, KFS and ECONZ.

²⁴ See KFS comments at 10-11 and RTCM comments at A-10.

²⁵ See MTC comments at 13-14, NMEA comments at 7-8 and MMR comments at 11.

²⁶ The technical requirements for NB-DP are contained in CCIR Recommendations 476 and 625. See 47 C.F.R. § 80.219.

sion should permit higher data rates and whether the 100 baud requirement is desirable to ensure system compatibility.

15. Numerous commenters agree that the current 100 baud data rate for NB-DP is slow, thus causing channel congestion and placing an unnecessary economic burden on the maritime community.²⁷ Additionally, HAL Communications Corporation (HAL), a manufacturer of HF radio data communications equipment, points out that modern data transfer protocols utilize innovative error correction algorithms which are less likely to require inefficient retransmissions under constantly varying ionospheric conditions.²⁸ Further, according to Pin Oak International, Inc. (POI), operator of a private coast station and two non-commercial vessels, NB-DP utilizes a variation of the Baudot character set, which is shorter than and incompatible with the ASCII character set used by modern personal computers.²⁹ As the commenters have shown, the current NB-DP protocol is incapable of adequately handling today's maritime traffic because of its slow data rate, inefficient error correction capabilities, and limited character set.

16. The commenters generally agree that there is a need to improve the efficiency of the NB-DP protocol while retaining system compatibility. Three commenters suggest that the Commission retain the current 500 Hz authorized bandwidth, but eliminate requirements which are protocol-specific, such as data rate, data word length, and type of modulation.³⁰ Within this scheme, any protocol or modulation could be used, so long as the emissions do not exceed the limits set forth in the Commission's rules for NB-DP operations. Five commenters, however, agree that in order to maintain a "common denominator" of system compatibility, any proposed NB-DP operations must be capable of operating in accordance with the current NB-DP system (CCIR Rec. 625).³¹ Additionally, POI and SEA maintain that proposed NB-DP operations should allow the full ASCII character set in order to facilitate operation with modern communication software.³² Further, POI notes that many modern data communication products, such as CLOVER and PACTOR, have the ability to connect calls using station call signs, instead of requiring a Selective Calling (Selcal) number.³³ POI claims that an additional application must be filed with the Commission in order to obtain a NB-DP Selcal number. Therefore, POI requests that the Commission permit the use of call signs with NB-DP, instead of requiring that each user obtain a Selcal number.³⁴

17. We agree with the commenters that relaxing NB-DP regulations should allow more advanced and efficient communication modes to evolve. We believe, however, that there is a need for a "common denominator" to ensure system compatibility. Therefore, we propose to permit NB-

DP utilizing any data communications protocol, character set, data rate, and data word length, so long as the emissions meet the requirements set forth in 47 C.F.R. §§ 80.205, 207, 209, and 211(f). These minimum requirements should provide the flexibility needed to promote spectrally efficient, high speed data transfer on NB-DP channels. In addition, we propose that all NB-DP equipment be capable of, but not limited to, operation in accordance with CCIR Rec. 625.

18. Regarding POI's request to eliminate the need for a Selcal number in order to utilize NB-DP, we believe that such a change would degrade marine service compatibility. A Selcal number can be requested when making application for a ship station or coast station authorization. We do not dispute that advanced protocols may be capable of handling call signs. We must provide, however, compatibility with the current system which does not have the capacity to transfer call signs.³⁵ Therefore, we will continue to require each station participating in NB-DP to obtain a Selcal number.

19. In summary, we propose to allow expanded NB-DP operations by permitting the use of advanced data communication protocols, so long as such use meets the requirements set forth in 47 C.F.R. §§ 80.205, 207, 209, and 211(f). Further, all NB-DP equipment must be capable of, but not limited to, operation in accordance with CCIR Rec. 625.

D. Private Carriers and Exclusivity

20. In the *NOI*, we asked whether private coast stations should be allowed to serve as private carriers, drawing an analogy to the land based Specialized Mobile Radio Service. We also asked whether private coast stations should be allowed exclusive use of maritime channels.³⁶ Commenters oppose exclusivity and private carriers because of the limited number of channels, the need for universal accessibility, and the safety characteristics of the maritime service. The only commenter who supports exclusivity and private carriers relied on a presumption that additional channels would be made available.³⁷ While these arguments are not conclusive, they are persuasive, and they reflect a general opposition to private carriers and exclusivity in the maritime service. Moreover, amendments to the Communications Act after we adopted the *NOI* raise additional issues that were not present when we first considered proposing this private carrier service.³⁸ As such, we will not consider the private carrier and exclusivity questions in this proceeding. At a later date we may revisit these issues if changes in technology and communications patterns warrant such action.

²⁷ See KFS comments at 7, SEA comments at 8, NMEA comments at 6, MMR comments at 8 and USCG reply comments at 1.

²⁸ See HAL comments at 3.

²⁹ See POI comments at 18.

³⁰ See HAL comments at 5, KFS comments at 7 and SEA comments at 8.

³¹ See KFS comments at 7, MMR comments at 8, NMEA comments at 6, RTCM comments at 7 and USCG reply comments at 1.

³² See POI comments at 18 and SEA comments at 8.

³³ Selcal numbers are used for automatic identification of NB-DP transmissions and are assigned by the Commission.

³⁴ See POI comments at 22.

³⁵ CCIR Rec. 625 was developed to utilize five digit Selcal numbers, not call signs which are a combination of characters and digits. Because we propose to require each NB-DP station to be capable of operation in accordance with, but not limited to, CCIR Rec. 625, each NB-DP station must have a Selcal number.

³⁶ See *NOI* at ¶¶ 21-22.

³⁷ In opposition to private carriers and exclusivity are MMR, NMEA, KFS and ACBL/WATERCOM. Supporting these concepts is RTCM. SEA notes that there are potential uses for both private carriers and exclusivity, but has reservations about both.

³⁸ See 47 U.S.C. § 332 (1994).

E. Permissible communications

21. In the *NOI*, we noted that in 1986 the Commission declined to adopt rules that would have permitted VHF public coast stations to serve vehicles on land on a subsidiary basis.³⁹ Since that time, however, the Commission has granted several waivers, allowing individual public coast stations to serve land vehicles on a secondary basis, and has received no complaints of harmful interference to marine communications.⁴⁰ As we stated in the *NOI*, allowing public coast stations to serve land mobile vehicles benefits the maritime community, as some of these stations may have ceased operations had they not been able to supplement their revenues by providing land mobile service. Further, such subsidiary communications increase spectrum efficiency by allowing public coast stations to utilize excess capacity to operate under their station licenses. In the *NOI*, we sought comment on amending the rules to allow public coast stations to serve land mobile users on a secondary basis.

22. Eight commenters⁴¹ are uniformly in favor of allowing public coast stations to serve land mobile vehicles, though several stress that such service must remain strictly secondary to maritime uses. For instance, RTCM points out that priority of marine communications can be insured, even in the automated mode, by using protocols which are capable of differentiating between and giving priority to certain groups of users.⁴²

23. Accordingly, we propose to permit all public coast stations to provide service to land vehicles, under their current coast station license, on a secondary basis. Transmitters installed in these vehicles must be type accepted for use within the VHF band in either the Maritime Services (Part 80), the Private Land Mobile Services (Part 90), or the Public Mobile Service (Part 22). Additionally, while operating under the coast station's license, such transmitters must operate only on the public correspondence channels authorized for use by the associated public coast station. Further, vehicle identification must consist of the public coast station's call sign, followed by a numeric or alphabetic unit identifier assigned by the associated coast station. Such subsidiary service must cease immediately upon written notice by the Commission that the station is causing harmful interference to marine communications.

24. In all cases, maritime users are to have priority over land mobile users. Public coast stations, electing to serve land mobiles, that use automatic interconnection will be required to distinguish between maritime users and land mobile users, and provide priority to maritime users. Additionally, we propose that Automated Maritime Telecommunications System (AMTS)⁴³ stations be allowed to pro-

vide land mobile service under the same conditions. Finally, we are proposing that the channel loading requirements specified in Section 80.371(c) of the Commission's Rules be amended to remove the showing required for a licensee to obtain additional marine VHF channels. While this rule's purpose is to prevent channel warehousing, we believe it is out-of-date in light of the burdensome procedures required, and the fact that it is based on the antiquated notion that public coast stations need only one or two channels to serve their market competitively. We, therefore, request comment on our proposal to remove the showing requirement. Specifically, should we replace the showing requirement with a less burdensome anti-warehousing measure, e.g., an applicant may request up to five channels at a time, where available, but may not receive additional channels until the lesser of either five channels or all VHF channels licensed to the applicant, in the area where it seeks additional channels, are constructed and operating?

F. Intra-service frequency sharing

25. In the *NOI*, we noted that the number of public coast stations operating in the 2-4 MHz. medium frequency (MF) band has decreased by 25% since 1989, while private coast stations are experiencing substantial frequency congestion in the MF band.⁴⁴ We asked whether the Commission should permit private coast stations to use public correspondence frequency pairs in the MF band.⁴⁵ Four commenters support such intra-service sharing in the MF band as a way to relieve private coast station frequency congestion and extend the scope of private communications.⁴⁶ NMEA, RTCM and KFS support the idea of eliminating the public/private coast station distinction for licensing the channels available for coast stations in the MF band.⁴⁷ MMR and ACBL/WATERCOM agree that this is feasible for the 2 MHz band, but state that the 4 MHz band is too crowded to allow private coast stations to use the public coast station frequencies.⁴⁸

26. Additionally, we noted in the *NOI* that, of the 42 channels available to boaters in the VHF band, in most areas only six are allocated to noncommercial operations, i.e., pleasure craft. Because of the recent dramatic increase in the number of pleasure boats equipped with VHF maritime radios we requested comments on the feasibility of removing the distinction between commercial and non-commercial operations. NMEA, RTCM, KFS and SEA support eliminating the commercial/non-commercial distinction in the allocation of VHF frequencies.⁴⁹ ACBL/Watercom advocates maintaining the distinction be-

³⁹ See PR Docket No. 86-2, 1 FCC Rcd 1312 (1986) (*Report and Order*). The Commission found that conditions in the VHF public coast station market, at that time, were not sufficiently homogeneous to permit such service nationwide.

⁴⁰ See, e.g., *In the matter of Request for waiver of Section 80.453 of the Rules to permit public coast station WHU247 to serve mobile vehicles on land*, 6 FCC Rcd 4846 (1991); *In the Matter of Global Communications, Inc.*, 7 FCC Rcd 2238 (1992) and *In the Matter of Custard, Inc. Request for waiver of Section 80.453 of the Rules to permit public coast station KFN to serve mobile vehicles on land*, 7 FCC Rcd 4515 (1992).

⁴¹ Comments in support filed by MTC, NMEA, MMR, RTCM, SEA, KFS, ORCO and ACBL/WATERCOM.

⁴² See RTCM comments at A-9.

⁴³ An AMTS is an automatic, integrated and interconnected

maritime communications system serving ship stations. The AMTS provides voice and data public correspondence service to the maritime community similar to that provided by landline telephone systems on specific frequencies allotted to the AMTS.

⁴⁴ See *NOI* at ¶ 24.

⁴⁵ Currently, the rules allocate forty-three radiotelephony frequency pairs to public coast stations and only ten frequency pairs to private coast stations in the 2-4 MHz band.

⁴⁶ See NMEA comments at 7, RTCM comments at A-9, KFS comments at 9 and MMR comments at 10.

⁴⁷ NMEA Comments at 7, RTCM comments at A-9 and KFS comments at 9.

⁴⁸ See MMR Comments at 10 and Watercom comments at 8.

⁴⁹ See NMEA comments at 7, RTCM comments at A-9, KFS comments at 9 and SEA comments at 10.

cause commercial operators often carry dangerous cargo and operate in hazardous conditions where interference by non-commercial vessels could affect safety.⁵⁰

27. In light of the comments received, we propose to permit private coast stations to apply for unassigned public coast station frequency pairs in the 2 MHz band, but not in the 4 MHz band. We welcome data on congestion in the 4 MHz band, to help us decide whether to eliminate the public/private distinction entirely for MF channel assignments, or to maintain the distinction as it currently stands. In the VHF band, we propose to abolish the commercial/non-commercial categories and replace them with a single "Vessel Operations" category. Our proposal reserves certain existing categories such as port operations and intership safety, but otherwise allow any vessel to use VHF frequencies in the Vessel Operations category. We believe that this proposal will reduce channel congestion and increase flexibility in the VHF band by redistributing radio traffic on a regional basis. We appreciate ACBL/Watercom's safety concerns, however, and specifically request comments on the proposed rules and the following two questions:

- a) Should single channels be designated for specific regional needs, such as towing operations?
- b) What impact, if any, will this proposal have on the safety of commercial operations?

G. Trunking

28. In the *NOI*, we asked whether the Commission should propose rules to facilitate trunking on maritime service channels.⁵¹ Additionally, we requested comments on the number of channels needed to support trunking and whether a standard protocol should be required. Each of the eight commenters who addressed the topic generally support trunking as a means to decrease congestion on public correspondence channels.⁵² A majority of the commenters agree, however, that there are not enough channels available in all regions to support trunked systems. Further, some of the commenters claim that the Commission would have to realign public correspondence channels on a regional basis in order to facilitate trunking. Finally, comments are divided regarding the necessity of a standard trunking protocol. Because of the diversity of the comments, we believe that more specific information is needed. The ramifications of allowing trunking in the marine VHF band are too nebulous for us to propose specific rules at this time. Nonetheless, we agree with the commenters that trunking may be a means to decrease congestion on public correspondence channels. We request specific comment on the following questions.

a) What is the minimum number of channels needed to support trunking? What assumptions are used to arrive at this figure?

b) What are the advantages and/or disadvantages of obtaining additional channels for trunking through:
i) regional realignment, ii) requiring narrowband equipment, and iii) interservice sharing?

c) What are the advantages and/or disadvantages of permitting public coast stations to implement trunked systems which use proprietary communication protocols?

H. Narrowband

29. In the *NOI* we requested comment on whether we should consider the use of 12.5 kHz narrowband FM (NBFM) and other analog or digital narrowband modulation techniques to increase spectrum efficiency. Additionally, we noted that the U.S. intended to submit a draft report and draft recommendation to the International Telecommunication Union's Radiocommunication Study Group 8 (ITU-R, SG8)⁵³ suggesting the use of 12.5 kHz channel spacing in the VHF maritime band. Our recommendation that 12.5 kHz NBFM be adopted internationally was not accepted. A draft New Recommendation, however, was adopted by ITU-R, SG8, suggesting that 12.5 kHz channel spacing could be used as an interim measure to relieve congestion in areas where additional channels are needed immediately. All commenters except one support the implementation of 12.5 kHz NBFM.⁵⁴ Because of the large number of issues which surround its proposed implementation, however, we will consider this matter in a separate proceeding.⁵⁵

I. Maritime Mobile Sharing of Private Land Mobile Frequencies

30. Another option discussed in the *NOI* to reduce congestion in the maritime services was inter-service sharing with the Private Land Mobile Radio Services. We noted that a number of VHF channels which are allocated to the maritime services internationally are allotted in the United States for private land mobile operations and that sharing appears possible. As a result, we asked whether the Commission should permit marine users to share certain of these frequencies and, if so, how the sharing should be accomplished.

31. Four commenters, all representing entities in the maritime services, support marine sharing of private land mobile VHF band frequencies.⁵⁶ For example, RTCM states that sharing these frequencies may help decrease the channel congestion which exists in the VHF marine band.⁵⁷ The Association of American Railroads (AAR), however,

⁵⁰ See ACBL/WATERCOM comments at 7-8.

⁵¹ Trunking is the generic term for any computerized technology that permits groups of channels to be shared dynamically by many users, resulting in more efficient use of the spectrum. When an end user wants a channel, a computer controlled trunking system selects an unused channel from among those allocated to the system and assigns it to the end user. In general, greater efficiency is realized as the number of trunked channels increases.

⁵² Comments were filed by GMCS/REC, KFS, MTC, NMEA, RTCM, and SEA. Reply comments were filed by ECONZ and MTC. Commenters addressed the trunking of only public correspondence channels.

⁵³ See ITU-R Document 8B/TEMP/40-E, November 2, 1993.

⁵⁴ GMCS/REC, KFS, MMR, NMEA, ORCO, RTCM, and SEA filed comments. ECONZ and USCG filed reply comments. SEA claims that, based on experience with narrowband land mobile equipment, amplitude-companded single-sideband (ACSB) technology, using 5 kHz channel spacing, would offer better performance than NBFM equipment. See SEA comments at 10.

⁵⁵ NMEA has informally agreed to form a special committee to propose standards for NBFM marine VHF equipment.

⁵⁶ See KFS comments at 11, NMEA comments at 9, RTCM comments at 12 and SEA comments at 11.

⁵⁷ See RTCM comments at 12.

strongly objects to any proposed sharing of railroad frequencies. AAR claims that there are no substantive regions along the United States coastline where railroad frequencies are not used.⁵⁸ Additionally, AAR contends that major port cities, where marine channels are congested, are also major rail centers where sharing would not work.⁵⁹ Finally, AAR argues that, because railroad frequencies are often used to coordinate the movement of heavy equipment and passengers on trains traveling at high speeds, harmful interference would jeopardize railroad safety.⁶⁰

32. As we stated in the *NOI*, more and more Americans are learning about the benefits of mobile radio every day. This growing demand for mobile communications has carried over to the maritime area. This coupled with the continuing increase in the number of recreational and other vessels has led to major congestion problems. Ideally, we could address frequency congestion problems in each of the private radio services solely through additional regulatory flexibility in-service, and by facilitating the development and use of new, spectrally efficient technology. These measures alone, however, have not resolved channel congestion. In the past, we have taken additional steps to alleviate congestion such as interservice sharing. In a companion item, for example, we allow certain private land mobile entities (most Industrial and Land Transportation eligibles, including railroads and motor carriers) to share 400 kHz of maritime spectrum in geographic areas where it is not being used by maritime eligibles.⁶¹

33. Interservice sharing has successfully increased spectrum-use efficiency in the past and we find nothing in the comments to indicate that on a limited and carefully coordinated basis it will not work here. We propose, therefore, to allow maritime users to share 400 kHz of private land mobile spectrum, 200 kHz from the Railroad Radio Service⁶² and 200 kHz from the Motor Carrier Radio Service.⁶³

34. To protect land mobile operations, we propose to make most of the frequencies available only to public coast stations for paired, duplex operations.⁶⁴ We are additionally proposing to permit intership, low power operations on

three frequencies.⁶⁵ Further, we propose to use the same co-channel separation criteria that we adopted for land mobile sharing of maritime spectrum.⁶⁶ This should provide sufficient protection to railroad operations. Likewise, to provide protection to motor carrier operations we will require maritime operations on these channels (coast stations) to be located at least 80 km (50 miles) from a co-channel motor carrier base station.⁶⁷ In summary, the proposed rules would permit public coast stations to share certain private land mobile frequencies when located at least 80 km (50 miles) from co-channel motor carrier base stations and when meeting the minimum separation from co-channel railroad base stations.⁶⁸

35. Until we gain more experience with this sharing arrangement, we propose to limit public coast stations operating on these frequencies to locations within 16 km (10 miles) of the U.S. coast line or any navigable waterway. Finally, we propose to permit use of the frequencies 12.5 kHz offset from the proposed shared frequencies as provided in the proposed rules. We request specific comment on the proposed separation requirements and the assumptions used to arrive at the proposed minimum separation matrix.

J. AMTS Channels

36. The Commission reallocated one megahertz of spectrum from the AMTS to a new Interactive Video and Data Service (IVDS).⁶⁹ This action effectively "orphaned" the 216-217 MHz band by taking away the channels that had been paired with this band. We requested suggestions for new uses of this band and noted that proposed uses must not cause harmful interference to Television (TV) Channel 13. We are proposing rules to permit use of this band in a separate, companion item.⁷⁰

K. HF Automatic Link Establishment (ALE)

37. On November 22, 1993, BR Communications (BR) submitted a letter⁷¹ requesting that, as part of the Commission's effort to update the maritime rules, Parts 80 and 87 of the Commission's rules, 47 C.F.R. Parts 80 and 87, be

⁵⁸ Attached to its comments, AAR submitted a map showing the location of all railroad base stations in the 48 contiguous states. See AAR comments at Exhibit 1.

⁵⁹ See AAR comments at 3.

⁶⁰ See AAR comments at 5.

⁶¹ See *First Report and Order*, PR Docket No. 92-257, __ FCC Rcd (1995).

⁶² From 161.3625 to 161.5625 MHz.

⁶³ From 159.4875 to 159.6875 MHz.

⁶⁴ In this duplex arrangement, public coast stations will call ship stations on railroad service frequencies and ship stations will call public coast stations on motor carrier frequencies.

⁶⁵ 159.550 MHz, 159.575 MHz, and 159.600 MHz (motor carrier frequencies).

⁶⁶ See *First Report and Order*, PR Docket No. 92-257, __ FCC Rcd ___, at ¶ 9-11 (1995). We are proposing a matrix which defines the minimum separation required between a public coast station and any co-channel railroad base stations, based on the coast station's transmitter power and antenna height. We note, however, that the distances in the matrix were calculated assuming that an average railroad base station operates with 100 W ERP at 122 meters (400 feet) above average terrain, which may be too conservative.

⁶⁷ Because the Railroad and Motor Carrier frequencies correspond to the proposed coast station base and mobile frequencies respectively, two different types of separation criteria

are needed. The separation matrix serves to govern base-to-base transmissions, while the fixed, 80 km limit is intended to prevent harmful interference from marine mobiles to Motor Carrier base stations.

⁶⁸ Because the 25 kHz maritime channels and 15 kHz land mobile channels in question are not aligned, maritime operation within the authorized land mobile bandwidth is considered co-channel. For example, coast station operation on 161.525 MHz, for the purposes of this proposal, is considered co-channel to railroad operation on both 161.520 MHz and 161.535 MHz.

⁶⁹ See *Report and Order* in GEN Docket 91-2, 7 FCC Rcd 1630 (1992). The automated maritime telecommunications system (AMTS) uses duplex channel pairs and formerly was allocated 80 such pairs divided up into 4 groups of 20 each, labelled A,B,C and D. One half of Groups C and D was reallocated to IVDS in GEN Docket 91-2. See also *Memorandum Opinion and Order* in GEN Docket 88-372, 7 FCC Rcd 3607 (1992).

⁷⁰ See *Notice of Proposed Rule Making*, WT Docket No. 95-__, FCC Rcd ___, (1995).

⁷¹ BR's letter, which contained technical information regarding ALE and proposed rule modifications, was treated as a comment to this proceeding. See letter from Mr. Henry Goldberg on behalf of BR Communications, to Mr. William F. Caton, Acting Secretary, Federal Communications Commission, Washington, DC (November 22, 1993).

amended to permit the use of linear frequency modulated continuous wave (FMCW) modulation technology for the purpose of Automatic Link Establishment (ALE) in the marine and aviation HF frequency bands.⁷² BR argues that, because of the inherent variability in ionospheric propagation, highly trained operators are often needed to establish and maintain HF communication links. BR claims that ALE systems can minimize connect time by measuring the quality of each possible link and choosing the best available channel. The petitioner further states that ALE systems retain a memory of other viable channels and are able to switch frequencies as the current link deteriorates. In this manner, BR maintains that an untrained operator can quickly establish and maintain an HF link using an ALE-equipped transmitter.⁷³

38. The petitioner proposes that ALE operation occur in the 2-30 MHz band, allowing a station's FMCW signal to occupy each channel within the band for approximately 30 milliseconds, four times per hour, in order to determine channel quality. BR claims that the FMCW signal will normally be limited to 10 Watts effective radiated power (ERP) and will not cause harmful interference to communication within the HF band. Additionally, BR notes that since 1966, ALE systems of this type have been successfully utilized by the military world-wide, with no resulting interference complaints.⁷⁴ In support of BR's proposal, RTCM argues that ALE can be utilized without adversely affecting current HF communications.⁷⁵

39. We agree that permitting the use of spectrally-efficient, state-of-the-art communication techniques, such as ALE within the HF band, is in the public interest. Therefore, we propose to permit the use of brief FMCW signalling in the 2-27.5 MHz band under Parts 80 and 87 of the Commission's rules for the purpose of ALE. Such transmissions, however, must not occur on distress, safety, or time-standard frequencies within the band.⁷⁶ Further, we request specific comment regarding the proposed rules and the following questions:

- a) Is FMCW signalling the only way to implement HF ALE? What other methods are currently used?
- b) If other ALE modulation techniques exist, should several be allowed or should the Commission mandate a standard modulation?
- c) What specifications should be mandated to ensure that ALE will not cause harmful interference to communications in the HF band?
- d) Although brief FMCW signalling may be tolerable on voice channels, will such signalling be detrimental to data communications in the band? Should channels designated for facsimile, radioprinting, or data communications be protected in the same way as distress frequencies?
- e) Minimum ALE capabilities could include automatic signalling and response, selective calling, analysis of channel quality, link maintenance, data

transfer, error checking, etc. Should the Commission mandate minimum ALE requirements, and if so, which ones?

L. Ship-to-Ship and Ship-to-Private Coast Station Facsimile

40. We received a Petition for Rule Making (RM 8352) from Alaska Commercial Electronics (ACE) that requested amendment of the Maritime Service Rules to allow the transmission of facsimile signals over ship-to-ship and ship-to-private coast station VHF channels.⁷⁷ The rules currently allow facsimile transmissions over VHF public correspondence channels,⁷⁸ and ACE proposes that such a service would be valuable in ship-to-ship and ship-to-private coast station applications. Eight commenters responded to the petition, all supporting the idea.⁷⁹ Commenters list a number of reasons why facsimile services would benefit the maritime community; among them are the provision of maps showing weather and ice conditions, speeding up the transmission lists such as grocery and supply orders, providing hard copies of information such as commercial docking and unloading schedules, and making maritime radio communications available to persons with hearing or speech impairments.

41. In light of the comments received, we propose to permit facsimile transmissions on a single VHF channel for ship-to-ship and ship-to-private coast station use. Because all the comments to the Petition for Rule Making came from Alaska, and because of the unique dependence of Alaska on maritime transportation, we propose to authorize this service initially in Alaska only. In accordance with the ACE petition, we will require all facsimile transmissions to follow the same technical requirements as marine VHF voice radio. We have selected marine VHF channel 68 (156.425 MHz) as the frequency for facsimile operations. To reduce our administrative burden and expedite the effect of our rule change, we propose to add this channel to all current Alaskan private coast station authorizations, for facsimile transmissions only, without requiring each licensee covered to modify its authorization. Under this proposal, private coast stations which are currently authorized to use channel 68 would be permitted to transmit both voice and facsimile. Vessels may continue to use public correspondence frequencies for facsimile communications with public coast stations.

42. We seek specific comment on this proposal and request that commenters address the following questions.

- a) Should the Commission allow facsimile emissions via private coast stations throughout the rest of the United States?
- b) Should other types of data transmissions be permitted in addition to facsimile, so long as the emissions do not exceed the authorized radiotelephone channel bandwidth?

⁷² ALE refers to the use of a scanning transceiver to establish and maintain a radio link.

⁷³ See BR cover letter at 2-3.

⁷⁴ See BR cover letter at 3 and petition at 3.

⁷⁵ See RTCM comments at A-3.

⁷⁶ See proposed rules §§ 80.229 and 87.149 in Attachment B.

⁷⁷ See ACE, *Petition for Rule Making* at 1 (August 10, 1993).

⁷⁸ See 47 C.F.R. § 80.363(b).

⁷⁹ Comments in support were filed by ACE; Griffith Marine Navigation, Inc.; the Petersburg Charter Boat Association; Alaskan Star Charters; Mr. Cam Tulloch; Mr. Spencer T. Ellsworth; the Alaska Governor's Council on Disabilities and Special Education and the University of Alaska.

c) Would a single VHF channel, set aside exclusively for facsimile/data transmissions, be capable of handling anticipated traffic? Would this type of allocation efficiently use the marine spectrum?

d) Alternatively, what would be the advantages and/or disadvantages of permitting facsimile/data transmissions on the same channels as voice communications?

e) The type of arrangement mentioned in (d) has worked successfully in the past at public coast stations, where the per minute charges have apparently curbed congestion. Should certain restrictions, such as time limits or silence periods, be placed on facsimile/data transmissions to and from private coast stations?

M. Other Issues

43. *Coast Station Operator Licensing.* MMR, KFS and ACBL/WATERCOM urge us to eliminate the requirement that coast station telephone operators hold commercial radio operator licenses. KFS states that the rules for coast station operators were developed before computers and remote operated transmitters were common, and that today knowledge of computer operations is more important than radio knowledge for coast station operations.⁸⁰ MMR and Watercom point out that the international Radio Regulations do not require licensed operators for coast stations, and that the Commission has rescinded rules which permitted only licensed operators to maintain and adjust transmitters in the public mobile, private land mobile, private operational-fixed microwave, and personal radio services.⁸¹

44. In light of the comments received and Commission actions with regard to operator requirements in other services, we propose to eliminate the requirements for coast station telephone operators to hold commercial operator licenses. Currently, coast stations transmitting radiotelephony that have 250 watts or less carrier power operating above 30 MHz, and coast stations that have 250 watts or less carrier power operating below 30 MHz in Alaska, require no operator licenses.⁸² We propose to remove the requirement for licensed operators at all other coast stations when transmitting radiotelephony. Operator requirements at public coast stations transmitting radiotelegraphy, however, will remain as currently stated in the rules.

45. *Ship Station Licensing.* RTCM argues that a ship station license does not automatically authorize the use of each class of emergency position indicating radio beacons (EPIRBs) and that licensees have to submit an application to modify their license upon purchase of a new class of

EPIRB. RTCM suggests that the license automatically cover every type of EPIRB.⁸³ The USCG concurs with RTCM's comments.⁸⁴ We agree with RTCM's suggestion and have proposed such a change to the rules. Additionally, we are proposing that the ship station license be modified to permit recreational boaters to operate on MF, HF, VHF and radar frequencies that are available to them.⁸⁵ Further, we are proposing a ninety-day grace period for renewal of ship station licenses and aircraft station licenses.⁸⁶ We request specific comment on these proposals.

46. *Posting of Certain Ship-Station Licenses.* The United States Coast Guard (USCG) asks that we modify our ship-station license posting rule.⁸⁷ Section 80.405(c), 47 C.F.R. § 80.405(c), requires ship-station licensees to post their Commission license, or a copy, at the principal control point of their station. The USCG points out, however, that smaller commercial and recreational vessels often do not have enclosed pilot houses; posting the license at the control point, therefore, subjects it to the elements, making the document unreadable. We agree with the USCG that this defeats the purpose of the rule and propose, therefore, an alternative posting requirement for vessels that do not have a weather-tight pilot house. For these stations, we will require the licensee to keep the license on-board, available immediately upon request. We ask for comments on this proposal; specifically, how we should define the types of vessels eligible to use the alternative rule, and whether we should open the proposed alternative to all vessels.

47. *Frequency Tolerance.* Marine VHF transmitters that are used at coast stations must meet a frequency tolerance of 5 parts per million (ppm), while ship station transmitters are required to meet 10 ppm. We believe that the 5 ppm frequency tolerance may be too restrictive for private coast stations that operate with low power. Further, the international Radio Regulations are less restrictive and permit a frequency tolerance of 10 ppm for both coast and ship station operations. We propose to permit private coast stations that operate at less than 25 watts carrier power to use transmitters with a frequency tolerance of 10 parts in 106.

48. *Associated Coast Station Units.* Private coast stations provide a myriad of services to the maritime industry including towing and docking services. Currently, however, the only way for private coast stations to use hand-held radios legally is to obtain a marine utility station license in addition to the private coast station license. We believe this to be an unnecessary requirement which costs the applicant an additional \$70 license fee and does not enhance spectrum management or aid enforcement efforts. We propose to authorize the use of a limited number of hand held maritime radios by private coast station licensees, termed "associated coast station", in a fashion analogous to the

⁸⁰ See KFS reply comments at 1.

⁸¹ See MMR comments at 12 and ACBL/WATERCOM comments at 9.

⁸² See 47 C.F.R. § 80.153.

⁸³ See RTCM comments at A-12. Currently, an applicant for a ship station license must request authorization for each class of EPIRB he/she plans to use during the license term. Although the applicant may request authorization for all three classes of EPIRBs listed on the application, most boaters only request authorization for equipment which they currently own and do not anticipate upgrades.

⁸⁴ See USCG reply comments at 2.

⁸⁵ Ships required by law or regulation to carry radio equip-

ment will continue to be required to request specific frequencies on their ship station applications, in order to ensure carriage of the proper equipment.

⁸⁶ We are not proposing to extend the station license period by ninety days. Rather, we are proposing to extend the period in which a licensee may renew his/her license, retaining the same call sign. Operation under an expired license during the grace period is not permitted unless such application is filed.

⁸⁷ See April 8, 1994, letter from E.J. Williams III, Chief, Marine Safety Division, USCG (by direction of the District Commander) to George Dillon, Chief, Aviation and Marine Branch, Federal Communications Commission. We are making this letter part of the record in PR Docket No. 92-257.

operation of associated ship stations.⁸⁸ The associated coast station will be limited to the frequencies, communications services and the service area authorized by the private coast station license. We seek comment on whether associated coast stations should be permitted, limitations as to the number of hand held units which may be used in association with a private coast station license, limitation on the permissible power of associated coast station units, and other restrictions which may be necessary to ensure that associated coast station units do not cause harmful interference or increase channel congestion.

N. Summary

49. We believe in the principle that government should be responsive to user needs and began this proceeding to review thoroughly the present requirements and future trends concerning maritime communications, to allow new technology, promote flexibility, remove unnecessary and inimical regulations and, most importantly, provide better service to the public. We are proposing, therefore, broad changes to the current rules and request comments on these proposals.

IV. PROCEDURAL MATTERS

INITIAL REGULATORY FLEXIBILITY ANALYSIS

50. An Initial Regulatory Flexibility Analysis is contained in Appendix A to this *Further Notice*.

51. Accordingly, we adopt this *Further Notice* under the authority contained in Sections 4(i) and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i) and 303(r). Pursuant to applicable procedures set forth in Sections 1.415 and 1.419 of the Commission's Rules, 47 C.F.R. Sections 1.415 and 1.419, interested persons may file comments on or before **September 22, 1995**, and may file reply comments on or before **November 21, 1995**. To file formally in this proceeding, you must file an original and four copies of all comments, reply comments, and supporting comments. If you want each Commissioner to receive a personal copy of your comments, you should file an original and nine copies. You should send your comments and reply comments to Office of the Secretary, Federal Communications Commission, Washington, D.C. 20554. Comments and reply comments will be available for public inspection during regular business hours in the Reference Center of the Federal Communications Commission (Room 239), 1919 M Street, N.W., Washington, D.C. 20554.

52. This is a non-restricted notice and comment rule making proceeding. *Ex parte* presentations are permitted, except during the Sunshine Agenda period, provided they are disclosed as provided in Commission rules. See generally 47 C.F.R. §§ 1.1202, 1.1203, and 1.206(a).

53. For further information, contact Roger Noel, Wireless Telecommunications Bureau, Federal Communications Commission, 2025 M Street, N.W., mail stop 1700C2, Washington, D.C. 20554; telephone 202-418-0680.

FEDERAL COMMUNICATIONS COMMISSION

William F. Caton
William F. Caton
Acting Secretary

Attachments

APPENDIX A

INITIAL REGULATORY FLEXIBILITY ANALYSIS

1. As required by Section 603 of the Regulatory Flexibility Act, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the expected impact on small entities of the proposals contained in this *Further Notice*. We request written public comment on the IRFA, which follows. Comments must have a separate and distinct heading designating them as responses to the IRFA and must be filed by the deadlines provided in paragraph 51, *supra*. The Secretary shall send a copy of this *Further Notice*, including the IRFA, to the Chief Counsel for Advocacy of the Small Business Administration in accordance with paragraph 603(a) of the Regulatory Flexibility Act. Pub. L. No. 96-354, 94 Stat. 1164, 5 U.S.C. §§ 601-612 (1981).

A. Reason for Action

2. The Commission proposes to 1) allow public coast stations to install equipment which will provide automatic interconnection between marine radios and the public switched telephone network, 2) authorize intra-service sharing of certain maritime frequencies by eliminating the public/private coast station distinction in the MF band and the commercial/non-commercial distinction in the VHF maritime band, 3) permit public coast stations to serve land vehicles on a secondary basis, 4) impose a minimum Digital Selective Calling requirement on future marine radios, 5) relax restrictions on narrow-band direct printing to take advantage of advances in technology, and 6) allow maritime sharing of certain Private Land Mobile frequencies.

B. Objectives

3. We seek to 1) remove restrictions on maritime communications which have caused uneven use of marine communications channels, 2) promote efficiency and competitiveness for marine coast stations, 3) make better use of currently unused or underused portions of the spectrum, and 4) take advantage of new technologies in maritime communications.

C. Legal Basis

4. The proposed action is authorized under Sections 4(i) and 303(r) of the Communications Act, 47 U.S.C. §§ 154(i) and 303(r).

⁸⁸ See 47 C.F.R. § 80.5.

D. Reporting, Recordkeeping and Other Compliance Requirements

5. Our proposed amendment to 47 C.F.R. § 80.405(c) would provide certain licensees with an alternative method to meet a current license-posting requirement.

E. Federal Rules Which Overlap, Duplicate or Conflict with These Rules

6. None.

F. Description, Potential Impact, and Small Entities Involved

7. Inter- and intra-service sharing of frequencies would allow better utilization of the radio spectrum, reduce congestion in the most crowded parts of the marine radio spectrum. Allowing automatic interconnection to the PSTN and service of land vehicles from public coast stations would allow public coast stations, many of which are small businesses, to compete more efficiently in the communications marketplace. Requiring marine radios to be equipped with minimum DSC capability and relaxing NB-DP restrictions would take advantage of advances in technology to increase efficiency in spectrum use.

G. Any Significant Alternatives Minimizing the Impact on Small Entities Consistent with the Stated Objectives

8. None.

APPENDIX B

PROPOSED RULES

Chapter I of Title 47 of the Code of Federal Regulations, Parts 2, 80, 87, and 90 are proposed to be amended as follows:

Part 2 - FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

1. The authority citation for Part 2 continues to read as follows:

AUTHORITY: Secs. 4, 302, 303, and 307 of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154, 154(i), 302, 303, 303(r), and 307, unless otherwise noted.

2. Section 2.106 is amended by adding a new maritime mobile entry and a new non-government footnote number 155 to the Non-Government Allocation, United States table (column 5) for the frequency band 158.115-161.575 MHz to read as follows:

§ 2.106 Table of Frequency Allocations.

* * * * *

United States Table		FCC Use Designators
Government	Non-Government	Rule Part(s) (6)
Allocation MHz (4)	Allocation MHz (5)	
* * * * *	158.115-161.575 LAND MOBILE NG6 MARITIME MOBILE 613 NG6 NG28 NG70 NG112 NG124 NG148 NG155	* * * * *

NON-GOVERNMENT (NG) FOOTNOTES

* * * * *

NG155 The bands 159.500-159.675 MHz and 161.375-161.550 MHz are allocated to the maritime service as described in Part 80 of this chapter. Additionally, the frequencies 159.550, 159.575 and 159.600 MHz are available for low-power intership communications.

* * * * *

Part 80 - Stations in the Maritime Services

1. The authority citation for Part 80 continues to read as follows:

AUTHORITY: Secs. 4, 303, 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303, unless otherwise noted. Interpret or apply 48 Stat. 1064-1068, 1081-1105, as amended; 47 U.S.C. 151-155, 301-609; 3 UST 3450, 3 UST 4726, 12 UST 2377.

2. Section 80.5 is amended by removing the definitions titled Commercial communications and Noncommercial communications and adding in alphabetical order the following definitions to read as follows:

§ 80.5 Definitions.

* * * * *

Associated coast station unit. A portable VHF transmitter used to serve the operational and business needs of ships and private coast stations with which it is associated.

* * * * *

Vessel operations communications. Communications between coast stations and ship stations or between ship stations which relate to the purposes for which the ships are used or to the needs of the ships.

* * * * *

3. Section 80.13 is amended by adding a new paragraph (c) to read as follows:

§ 80.13 Station license required.

* * * * *

(c) Voluntary ship station licenses will authorize the use of the MF, HF and VHF radiotelephone band, all Classes of EPIRBs, and ship radar stations.

4. Section 80.25 is amended by revising paragraphs (a) and (b) to read as follows:

§ 80.25 License term.

(a) Licenses for ship stations in the maritime services will normally be issued for a term of ten years from the date of original issuance, major modification, or renewal. Licensees may apply for renewal of the station license up to ninety (90) days from the date the license expires.

(b) Licenses other than ship stations in the maritime services will normally be issued for a term of five years from the date of original issuance, major modification, or renewal. Licenses, other than Public Coast and Alaska Public Fixed stations, may be renewed up to

ninety (90) days from the date the license expires.

* * * * *

5. Section 80.89 is amended by revising the first sentence of the introductory portion of paragraph (f) to read as follows:

§ 80.89 Unauthorized transmissions.

* * * * *

(f) Transmit while on board vessels located on land unless authorized under a public coast station license. * * *

* * * * *

6. Section 80.107 is amended to read as follows:

§ 80.107 Operational conditions for use of private coast stations, marine utility stations and associated coast station units.

(a) A private coast station, marine utility station or an associated private coast station unit is authorized to transmit messages for the private business and operational needs of ships and aircraft.

(b) Up to five associated coast station units may be operated under a private coast station authorization under the following conditions:

(1) Except for distress and safety purposes, associated coast station units must use the private coast station's working frequencies;

(2) Associated coast station units must only be used to communicate with the associated private coast station and ship stations within the private coast station's service area;

(3) Power is limited to one watt; and,

(4) The station must be identified by the call sign of the coast station with which it is associated and an appropriate designator.

7. A new Section 80.123 is added under Special Procedures-Public Coast Stations to read as follows:

§ 80.123 Service to vehicles on land.

Marine VHF public coast stations may provide public correspondence service to vehicles on land, on a secondary basis, in accordance with the following:

(a) The public coast station must provide each associated land vehicle with a letter, which shall be presented to authorized FCC representatives upon request, acknowledging that the vehicle may operate under the authority of the associated public coast station's license;

(b) Land vehicle identification shall consist of the associated public coast station's call sign, followed by a unique numeric or alphabetic unit identifier;

(c) Radio equipment installed in the land vehicles must be type accepted for use under Part 22, Part 80, or Part 90 of this chapter. Such equipment must operate only on the public correspondence channels authorized for use by the associated public coast station;

(d) Transmitter power shall be in accordance with the limits set in § 80.215 for ship stations;

(e) Vehicles shall only operate within radio range of their associated public coast station;

(f) The land vehicle must cease operation immediately upon written notice by the Commission to the associated public coast station that the land vehicle is causing harmful interference to marine communications.

8. A new Section 80.133 is added under Special Procedures-Private Coast Stations to read as follows:

§ 80.133 Private coast stations using facsimile in Alaska.

Facsimile techniques may be implemented in accordance with the following paragraphs.

(a) Private coast stations in Alaska are eligible to use facsimile techniques with associated ship stations and other private coast stations in accordance with § 80.505(b) of this Chapter.

(b) The frequency 156.425 MHz is available for assignment to private coast stations in Alaska for facsimile transmissions.

(c) Equipment used for facsimile operations is subject to the applicable provisions of Subpart E of this Part.

9. In Section 80.153 paragraph (b) is amended by revising the entry titled "Coast telephone, all classes:" to read as follows:

§ 80.153 Coast station operator requirements.

* * * * *

(b) * * *

Minimum Operator License

Public coast telegraph, all classes --T-2.

* * * * *

Coast telephone, all classes -- None.

* * * * *

10. Section 80.177 is amended by revising paragraph (c) to read as follows:

§ 80.177 When operator license is not required.

* * * * *

(c) No operator license is required to operate coast telephone stations or marine utility stations.

* * * * *

11. Section 80.179 is amended by revising paragraphs (b), (c) and (d) to read as follows:

§ 80.179 Unattended operation.

* * * * *

(b) Automatic use of a transmitter during narrow-band direct-printing (NB-DP) operations in accordance with § 80.219.

(c) Automatic use of a transmitter during selective calling operations in accordance with § 80.225.

(d) Automatic use of a transmitter when operating as part of the Automated Maritime Telecommunications System (AMTS), an automated multi-station system for which provisions are contained in this Part, or an automated public coast station.

* * * * *

12. Section 80.203 is amended by adding a new paragraph (n) to read as follows:

§ 80.203 Authorization of transmitters for licensing.

* * * * *

(n) All marine MF, HF and VHF transmitters manufactured in or imported into the United States after February 1, 1997, or marketed or installed on U.S. ships or after February 1, 1999, must provide for a minimum DSC requirement in accordance with CCIR Recommendation 493 and 541 as modified by the table below. The following table lists the required minimum DSC capabilities for each class of DSC equipment:

Digital Selective Calling Classification Table

Class A Class B Class C VHF SC101 HF SC101

Tx Rx Tx Rx Tx Tx Rx Tx Rx

Format specifier:

Distress call	X	X	X	X	X	X	X	X	X
All ships call	X	X	X	X	.	X	X	.	X
Selective individual station call	X	X	X	X	.	X	X	X	X
Selective Semi-automatic/automatic service call	X	X	X	X	.	.	.	.	.
Selective call (group of ships)	.	X	.	X	.	.	.	.	.
Selective call (ship in geographic area)	.	X	.	X	.	.	X	.	X
Vessel traffic service call	.	.	.	.	.	.	.	.	.
Numerical identification of the station (address)	X	X	X	X	.	X	.	X	.
Self-identification (automatically inserted)	X	.	X	.	X	X	.	X	.
Frequency or Channel Information (non-distress)	X	X	X	X	.	X	X	X	X
Time and position (for distress call only)	X	X	X	X	.	X	.	X	.
Ships Position Information	X	X	X	X	.	.	.	.	.

Category (call priority):

Distress	X	X	X	X	.	X	.	X	.
Urgency	X	X	X	X	.	.	.	.	.
Safety	X	X	X	X	.	.	.	X	.
Ship's Business	X	X	.	.	.	.	.	.	.
Routine	X	X	X	X	.	X	.	X	.

(note: except for Class C, all units must be capable of receiving calls of any priority, but need not display that priority if an "X" is not marked)

Distress categories:

Undesignated	X	X	X	X	X	X	X	X	X
Fire, explosion	X	X	.	.	.	.	.	.	.
Collision	X	X	.	.	.	.	.	.	.
Grounding	X	X	.	.	.	.	.	.	.
Listing, in danger of capsizing	X	X	.	.	.	.	.	.	.
Sinking	X	X	.	.	.	.	.	.	.
Disabled and adrift	X	X	.	.	.	.	.	.	.
Abandoning ship	X	X	.	.	.	.	.	.	.
EPIRB emission	.	X	.	X	.	.	.	.	.

Class A Class B Class C VHF SC101 HF SC101

Tx Rx Tx Rx Tx Tx Rx Tx Rx

Telecommands:

VHF FM Simplex telephony	X	X	X	X	.	X	X	.	.
VHF FM Duplex telephony	X	X	X	X	.	.	X	.	.
Polling (tracking)	X	X	.	.	.	.	.	.	.
Selection information (telephone number)	X	.	X	.	.	.	.	.	.

Unable to comply:

No reason given	X	X	X	X	.	X	X	X	X
Congestion at maritime switching center .....	.	X	.	X	.	.	.	.	.
Busy	X	X	.	X	.	.	.	.	.
Queue indication .....	.	X	.	X	.	.	.	.	.
Station barred .....	.	X	.	X	.	.	.	.	.
No operator available	X	X	.	X	.	.	.	.	.
Operator temporarily unavailable	X	X	.	X	.	.	.	.	.
Equipment disabled	X	X	.	X	.	.	.	.	.
Unable to use proposed channel	X	X	.	X	.	.	.	.	.
Unable to use proposed mode	X	X	.	X	.	.	.	.	.

End of call	X	X	X	X
-------------------	---	---	---	---	---	---	---	---	---

Emission or type of call:

Single sideband telephony	X	X	X	X	.	.	.	X	X
Single sideband full carrier telephony	X	X	X	X	.	.	.	.	.
Radiotelex (SITOR) FEC	X	X	.	.	.	.	.	.	.
Radiotelex (SITOR) ARQ	X	X	.	.	.	.	.	.	.
Radiotelex (SITOR) receive only	X	X	.	.	.	.	.	.	.
F1B/J2B other than radiotelex	X	X	.	.	.	.	.	.	.
Recorder Morse Code	X	X	.	.	.	.	.	.	.
Manual Morse Code	X	X	.	.	.	.	.	.	.
Facsimile	X	X	.	.	.	.	.	.	.
Data									
CCITT V.21	X	X	.	.	.	.	.	.	.
CCITT V.22	X	X	.	.	.	.	.	.	.
CCITT V.22bis	X	X	.	.	.	.	.	.	.
CCITT V.23	X	X	.	.	.	.	.	.	.
CCITT V.26bis	X	X	.	.	.	.	.	.	.
CCITT V.26ter	X	X	.	.	.	.	.	.	.
CCITT V.27ter	X	X	.	.	.	.	.	.	.
CCITT V.32	X	X	.	.	.	.	.	.	.

Class A Class B Class C VHF SC101 HF SC101

Tx Rx Tx Rx Tx Tx Rx Tx Rx

Distress Acknowledgement	X	X	X	X	.	.	X	.	X
Distress Relay Acknowledgement .....	.	X	.	X	.	.	X	.	X
Acknowledgement, Able to Comply	X	X	X	X	.	X	X	X	X
Acknowledgement, Unable to Comply	X	X	X	X	.	X	X	X	X
Distress Relay	X	X	X	X	.	.	X	.	X
Test (MF and HF only)	X	X	X	X	.	.	.	X	.
Ship position or location registration updating	X	X	.	.	.	.	.	.	.
No Information (if no telecommand info is sent)	X	.	X	.	.	X	.	X	.
Neutral ships/aircraft in a war zone (RR Res 18)	X	X	.	.	.	.	.	.	.
Medical transport	X	X	.	.	.	.	.	.	.
Pay-phone/public call office	X	X	.	.	.	.	.	.	.
No second telecommand information	X	.	X	.	.	X	.	X	.
Power cutback to 1w on routine VHF all-ship calls	X	.	X	.	.	X	.	.	.

13. In Section 80.205, the table in paragraph (a) is amended by revising the second "J2B" entry to read as follows:

§ 80.205 Bandwidths.

* * * * *

Classes of emission	Emission designator	Authorized bandwidth (kHz)
* * * J2B ⁵ * * * * *	300HJ2B	0.5

⁵ NB-DP radiotelegraph and data transmission for communications with public coast stations.

* * * * *

14. In Section 80.207, paragraph (a) is revised and the table in paragraph (d) is amended by revising footnote 1, footnote 2 and adding footnote 13 to read as follows:

§ 80.207 Classes of emission.

(a) Authorization to use radiotelephone and radiotelegraph emissions by ship and coast stations includes the use of digital selective calling and selective calling techniques in accordance with § 80.225.

* * * * *

(d) * * *

Types of stations	Classes of emission
-------------------	---------------------

Ship Stations ¹	
Radiotelegraphy:	
* * *	
1605-27500 kHz	
* * *	
NB-DP ¹³	F1B, J2B
* * *	
Land Stations ¹	
Radiotelegraphy:	
* * *	
4000-27500 kHz:	
* * *	
NB-DP ¹³	F1B, J2B
* * *	

¹ Excludes distress, EPIRBs, survival craft, and automatic link establishment.

² Frequencies used for public correspondence and in Alaska 156.425 MHz. See §§ 80.371(c), 80.373(f) and 80.385(b). Transmitters type accepted before January 1, 1994, for G3E emissions will be authorized indefinitely for F2C, F3C, F1D and F2D emissions. Transmitters type accepted on or after January 1, 1994, will be authorized for F2C, F3C, F1D or F2D emissions only if they are type accepted specifically for each emission designator.

* * * * *

¹³ NB-DP operations which are not in accordance with CCIR Recommendation 625 or 476 are permitted to utilize any modulation, so long as emissions are within the limits set forth in § 80.211(f) of this Chapter.

* * * * *

15. In Section 80.209, the table is amended by adding a new footnote 6 to the entry for 30 to 100 watts in paragraph (a)(5)(i) to read as follows:

§ 80.209 Transmitter frequency tolerances.

(a) * * *

(5) * * *

(i) * * *

3 to 100 watts.....⁶

* * * * *

⁶ For transmitters operated at private coast stations with antenna heights less than 6 meters (20 feet) above ground and output power of 25 watts or less the frequency tolerance is

10 parts in 10^6 .

* * * * *

16. In Section 80.211 paragraph (d) is revised to read as follows:

§ 80.211 Emission limitations.

* * * * *

(d) The mean power of emissions from radiotelephone survival craft transmitters, 9 GHz search and rescue transponders, and radiotelegraph survival craft transmitters must be attenuated below the mean output power of the transmitter as follows:

(1) On any frequency removed from the assigned frequency by more than 50 percent, up to and including 100 percent of the authorized bandwidth: at least 25 dB;

(2) On any frequency removed from the assigned frequency by more than 100 percent of the authorized bandwidth: at least 30 dB.

* * * * *

17. Section 80.219, the text is revised to read as follows:

§ 80.219 Special requirements for narrowband direct-printing (NB-DP) equipment.

NB-DP and data transmission equipment installed in ship and coast stations before October 1, 1990, that operates on the frequencies in the 4,000-27,500 kHz bands must be capable of operation in accordance with the technical requirements of CCIR Recommendations 476 or 625. Equipment installed on or after October 1, 1990, must be capable of operation in accordance with the technical requirements of CCIR Recommendation 625. NB-DP and data transmission equipment are additionally permitted to utilize any modulation, so long as emissions are within the limits set forth in Section 80.211(f) of this chapter and the equipment is capable at a minimum of operation in accordance with CCIR recommendation 625.

18. In Section 80.225, the heading is revised, the first sentence in the introductory paragraph is revised, paragraphs (a) and (c)(3) are revised to read as follows:

§ 80.225 Requirements for selective calling equipment.

This section specifies the requirements for optional digital selective calling (DSC) equipment and selective calling equipment installed in ship and coast stations. * * *

(a) DSC equipment voluntarily installed in coast or ship stations must meet the requirements of CCIR Recommendation 493 or § 80.203(n). DSC equipment must not be used with the sensors referred to in § 80.179(e)(2). DSC equipment used on compulsorily fitted ships must meet the requirements contained in Subpart W for GMDSS.

* * * * *

(c) * * *

(3) Equipment functioning under the provisions of § 80.207(a) includes the brief use of radiotelegraphy, including keying only the modulating audio frequency, tone signals, and other signalling devices to establish or maintain communications provided that:

(i) These signalling techniques are not used on frequencies designated for general purpose digital selective calling (DSC) and distress and safety DSC calling as listed in § 80.359;

(ii) The authorized radiotelephone emission bandwidth is not exceeded;

(iii) Documentation of selective calling protocols must be available to the general public; and,

(iv) Harmful interference is not caused to stations operating in accordance with the International Radio Regulations.

19. A new Section 80.229 is added to Subpart E to read as follows:

§ 80.229 Special requirements for automatic link establishment (ALE).

Brief signalling for the purposes of measuring the quality of a radio channel and thereafter establishing communication shall be permitted within the 2,000 kHz - 27,500 kHz band under the following conditions:

a) The transmitter power shall not exceed 100 W ERP;

b) Transmissions must sweep linearly in frequency at a rate of at least 60 kHz per second, occupying any 3 kHz bandwidth for less than 50 milliseconds;

c) The transmitter shall scan the band no more than four times per hour;

d) Transmissions within 6 kHz of the following protected frequencies and frequency bands must not exceed 10 μ W peak ERP:

i) Protected frequencies (kHz)

2091.0	4188.0	6312.0	12290.0	16420.0
2174.5	4207.5	8257.0	12392.0	16522.0
2182.0	5000.0	8291.0	12520.0	16695.0
2187.5	5167.5	8357.5	12563.0	16750.0
2500.0	5680.0	8364.0	12577.0	16804.5
3023.0	6215.0	8375.0	15000.0	20000.0
4000.0	6268.0	8414.5	16000.0	25000.0
4177.5	6282.0	10000.0		

ii) Protected bands (kHz)

4125.0-4128.0
8376.25-8386.75
13360.0-13410.0
25500.0-25670.0

e) The instantaneous signal, which refers to the peak power that would be measured with the frequency sweep stopped, along with spurious emissions generated from the sweeping signal, must be attenuated below the peak carrier power (in watts) as follows:

i) On any frequency more than 5 Hz from the instantaneous carrier frequency, at least 3 dB,

ii) On any frequency more than 250 Hz from the instantaneous carrier frequency, at least 40 dB, and

iii) On any frequency more than 7.5 kHz from the instantaneous carrier frequency, at least $43 + 10\log_{10}$ (peak power in watts) db.

20. In Section 80.363, a new paragraph (c) is added to read as follows:

§ 80.363 Frequencies for facsimile.

* * * * *

(c) The frequency 156.425 MHz is available for facsimile communications between ships and between ships and private coast stations in Alaska using F2C or F3C emissions.